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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Models to Determine	)	CC Docket No. 96-45
Cost of Providing Service	)	

Comments of the
Rural Utilities Service

Introduction

The Rural Utilities Service (RUS) appreciates the opportunity to offer comment to the Commission on universal service and the proposed computer cost models.

RUS has 48 years of experience estimating the cost of rural telecommunications systems. The Agency mission of aggressively extending universal service by making secure loans has required RUS to develop accurate cost estimates and efficient design requirements. The comments that follow are based on this experience, and on RUS' knowledge of 900 LECs who now provide universal service to the most rural of areas.

RUS has obtained and run the BCPM, the BCM2, and the Hatfield 3 model. In these Comments, RUS offers general observations on models, and selected comments on the BCPM and Hatfield 3 models. Since these models have only been available for a few days of the comment period, RUS plans to continue running the models and will offer more specific comments in its Reply Comments.

The model sponsors deserve a great deal of credit for their intensive work and their attempts to be responsive to criticisms of the models. Our Comments focus on the most rural of areas, those with 25 or fewer subscribers per route mile. The Comments do not discuss the applicability of the models for densities above 25 subscribers per route mile.

1. A mechanism to ensure service quality and actual investment in infrastructure needs to be devised.

The Joint Board Recommendation, and the use of proxy models outlined, do not tie receipt of support to investment in infrastructure – they should. The Recommendation suggests a new universal service support (USS) mechanism that provides support based on a proxy cost model, irrespective of actual investment. Without incentive to invest, RUS is concerned that rural telecommunications infrastructure will not be maintained and replaced at the rate necessary to ensure high quality service. The presence of competition might help address this problem, but some rural areas may not attract effective competition, and where they do, competition may be targeted towards lower cost subscribers within those areas.

RUS believes that a relationship should be established between the amount of USS provided to an eligible telecommunications carrier (ETC) and actual investment in rural infrastructure in the area for which it receives support. This could be used by the states or the USS administrator also to ensure the quality and reliability of service the carrier provides.

The new mechanism should clearly prohibit using USS money received to serve high cost areas for low cost areas or unregulated businesses.

2. The national benchmark element to be used in determining support levels needs more study and perhaps adjustment.

USS payments are to be based on the model result and a national benchmark revenue level which will be dominated by urban revenue levels. RUS does not have comparative data on rural versus urban revenues, but we suspect that due to differences in income levels, value of the services provided and market potential there would be considerable difference.

Basic service subscription levels are consistent between urban and rural areas, but subscription to other services may not be. Income level discrepancies may restrict the subscription to vertical services in rural areas. Also, with fewer businesses and professionals per capita, rural areas have less market potential for subscription to vertical services. Carriers in high cost areas might be spurred by the national average revenues benchmark to introduce and market new services, but these services are not included in the core services, their infrastructure would not be considered in proxy cost models, and therefore they would not be supported. In rural areas, building unsupported plant to provide such services might cost more than the services would earn.

Using a national revenue benchmark to determine support level effectively places a rural carrier in the position of competing with urban and suburban carriers to reach a certain

revenue level. But urban and suburban carriers are not challenged by high cost and limited markets.

A second concern is that using a national revenue benchmark in the equation to determine support level requires that local differences in affordability be financed by the states, probably through intrastate USS mechanisms. The national USS might help to ensure affordability by supporting service in high cost areas, but where a state finds that the national average revenue (the main component of the national revenue benchmark) is too high, that state would have to support the difference. Unless all states create adequately funded intrastate mechanisms, local rate affordability may not be assured nationally. Some states, particularly predominately rural plains and western states, may not have adequate intrastate revenues to ensure affordability for their high cost areas through an intrastate universal service support mechanism.

The benchmark revenues for carriers should be adjusted for rural, regional, state or local differences. The states or the USS administrator could set appropriate revenue levels for each carrier for use in calculating USS. Alternatively, the Commission could move away from a revenue benchmark approach and use affordability (per month charge) or comparison of cost to serve.

3. The models should adjust to ensure quality service to all.

Today, rural residents receive a quality of service which differs from carrier to carrier. Some service meets the definition of "core services," some does not. The state of the rural infrastructure varies greatly. The model gives support irrespective of the state of the existing infrastructure. The reality is that rural infrastructure includes the good and the not so good. An effective model would ensure that the not so good is made good and the good is maintained and strengthened.

4. Support calculated on a per subscriber basis will not adjust for competition.

A telecommunications system is made up of fixed costs, such as switching common equipment and housing, and outside plant to cover a geographical area, as well as subscription-dependent costs, such as switch lines and outside plant incremental pairs. The models studied calculate cost on a per subscriber basis, assuming that a complete system is built and serves all of the subscribers in the study area. An ETC would receive support on this basis, and would lose support incrementally as it loses customers to a new entrant. If an ETC loses half of its subscribers, which may happen in rural areas which include small towns, it would lose half of its support, whereas its cost per subscriber might increase by a factor of 10 or more because the remaining subscribers would probably be the highest cost subscribers. This would threaten universal service availability in many rural areas. The models do not adjust for these fixed costs, and the resulting increase in support needed for the remaining rural residents.

Models need to recognize the common, unavoidable, costs of operating a complete telecommunication system and should adjust to ensure all are served with core services.

5. Current model inputs and assumptions don't work for the most rural of areas.

The BCPM and Hatfield 3 model are sophisticated computer programs using complex calculations based on many assumptions. They were developed on a "one size fits all with alterations possible" approach to estimating telecommunications system costs. In the Federal Communications Commission's (Commission's) Proxy Model Workshops, sponsors said that the key to using models successfully for high cost areas would be to make alterations in the inputs of the models, and they said their next versions of their models, which are BCPM and Hatfield 3, will allow those alterations.

RUS is examining the models' assumptions, and will offer detailed comment on those in its Reply Comments.

One assumption which may invalidate models for some projects is the $10,000 outside plant loop cost cap found in the BCPM. Most RUS borrower LECs have some loops that exceed $10,000, but RUS has found only a few systems that are cheaper to serve using wireless loop plant. There are several reasons for this. First, terrestrial wireless system costs are also affected by density. Often the most expensive loops are so far apart that multiple wireless systems would be required with few subscribers on each, making them economically impractical. Second, some areas are made impractical by signal blocking geography. Third, many systems have too few expensive loops to make a single system viable. For the most rural areas, the $10,000 outside plant loop cost cap just distorts the cost of serving subscribers and will cause underestimation of the cost of supporting universal service.

Also, if support level is based on an assumption of wireless technologies, perhaps the Commission needs to offer spectrum to the ETC at an affordable cost.

6. The best of computer models may not work for all rural areas.

RUS experience with these models so far indicates that they consistently and substantially understate the cost to build the most rural of telecommunications systems. At this time the models are being analyzed and the run results are being studied and the results will be presented in RUS Reply Comments. In general, for nine projects studied in Texas, the plant cost per subscriber calculated by the BCPM is less than one-half the amount RUS knows it would cost to build a new telecommunications system in those areas from scratch (a "greenfield" system). One other observation that can be made is that the BCPM estimates lower construction costs for some of the most expensive areas to serve than it estimates for less expensive areas. The rural areas diverge in character as much from each

other as they do from suburban and urban areas. It may be impossible to capture these divergences in a reasonable model. ETCs with densities below some threshold, perhaps 25 subscribers per route mile of plant, and those exhibiting exceptional characteristics, should be allowed an alternative to a one size fits all cost model.

If such a safety valve is made available, models could focus on the areas where they can work, and could become more straightforward to use and evaluate.

7. BCM2 performance vs. RUS experience suggests that "greenfield" systems are more expensive than embedded costs of existing systems.

RUS has compared BCM2 projected costs to build core service plant with RUS projected cost to build core service plant for loans made within the last two years. RUS then plotted those ratios against the rate of increase of total telephone plant in service (TPIS) for each loan. The comparison involved data on 99 loans. In those loans, rural LECs increased their TPIS from 22% to 220%. Loans on the low end of that range were generally for minor modifications of outside plant or central office equipment, while loans on the high end represent major rebuilds of those categories of equipment.

RUS found that the more new plant that is incorporated into a LEC at one time, the more the BCM2 undershot the RUS estimated cost.

The attached graph shows the relationship. The correlation of BCM2 TPIS to RUS estimated TPIS is very high (85-90%) for those projects which added less than 30% to their systems. The correlation slopes downward and for projects with over 100% increase in TPIS it is in the 40-50% range.

Since the BCM2 cost estimate is indifferent to when the plant is built, it represents a fixed reference number for the projects shown in the graph. This suggests that rural plant upgraded to provide core services using existing plant is actually less expensive than a greenfield build of plant to serve the same area.

This also shows that the models work better for areas that need little upgrade to meet core service requirements than areas that need a lot of investment to meet core service requirements.

RUS will research this further and report in the Reply Comments on this finding.

Conclusion

The current computer cost models are sophisticated, refined, versatile devices which consistently underestimate the cost of serving rural America. RUS is running the models and comparing them to RUS estimates of efficient system cost in all cases permitted by the models, and will report its results in the Reply Comments.

Other mechanisms need to be incorporated into the models, or the universal service support system. These include requiring the rural investment of universal service support and restructuring models to recognize ETCs' fixed costs.

Dated: 2/13/97

Administrator
Rural Utilities Service

TOTAL PLANT IN SERVICE

(Per Line)

BCM2 ESTIMATES vs RUS CURRENT PROJECT COSTS

(Rolling 10 Project Averages, 99 Total Projects)